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Model atmospheres of x-ray bursting neutron stars

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Abstract

We present an extended set of model atmospheres and emergent spectra of X-ray bursting neutron stars in low mass X-ray binaries. Compton scattering is taken into account. The models were computed in LTE approximation for six different chemical compositions: pure hydrogen and pure helium atmospheres, and atmospheres with a solar mix of hydrogen and helium and various heavy elements abundances; Z=1, 0.3, 0.1, and 0.01 Z⊙, for three values of gravity, logg=14.0, 14.3, and 14.6 and for 20 values of relative luminosity l=L/LEdd in the range 0.001-0.98. The emergent spectra of all models are fitted by diluted blackbody spectra in the observed RXTE/PCA band 3-20 keV and the corresponding values of color correction factors fc are presented. We also show how to use these dependencies to estimate the neutron star's basic parameters. © 2011 American Institute of Physics.

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